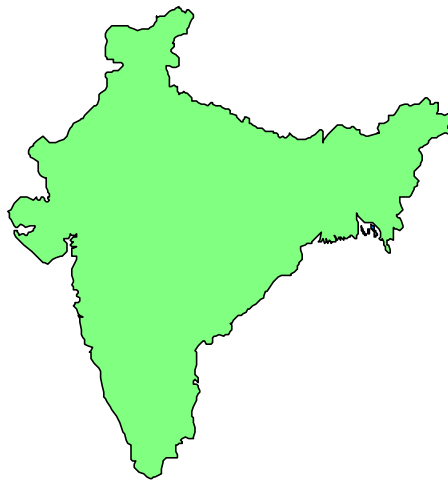


**AN OVERVIEW OF INDIA'S
INFORMATION TECHNOLOGY MARKET**

EXPORTIT INDIA



**U.S. DEPARTMENT OF COMMERCE
International Trade Administration**

Trade Development
Information Technology Industries
Office of Information Technologies

February 2001

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Data provided in this report was collected from a variety of published sources. Valuable comments were received from Timothy Miles, Office of Information Technologies, Information Technology Industries. The Office of Electronic Commerce, Information Technology Industries; and the Office of South Asia and Oceania, Market Access and Compliance also reviewed the report.

Information on the Office of Information Technologies can be found at <http://exportIT.ita.doc.gov>.

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EXECUTIVE SUMMARY

The Indian market for information technology (IT) products and services is poised to expand over the next few years. India's national goal is to make it a global IT power and one of the largest generators and exporters of software in the world by 2008. With this new focus on IT, the Government of India is creating a supportive framework to facilitate this growth. The creation of a National Task Force on Information Technology and Software Development, a new Ministry of Information Technology, and the passage of the Information Technology Bill to define and regulate transactions involving electronic trade and commerce support this effort. In addition, efforts to institute more relaxed trade policies and liberalization in investments must continue to set the foundation for technological advancement and international competitiveness.

The Indian IT market reached \$3 billion in 1999 and is expected to grow to nearly \$7 billion by 2002, according to the International Data Corporation. The computer systems and peripheral equipment sector is one of the primary growth drivers of the Indian IT market. Growing recognition of the importance of IT, particularly the Internet and electronic commerce (e-commerce) further stimulate demand. But given India's inadequate IT infrastructure, low and unequal distribution of income, and many rural communities, creative ways must be considered to make IT available on a wide-scale basis.

To help foster market growth, the U.S. and Indian Government agreed in October 2000 to launch an Information Technology Initiative (ITI). The ITI should increase cooperation between U.S. and Indian public and private sectors to promote the use of IT and e-commerce. Plans include joint efforts to organize e-commerce seminars, video conferences, and trade delegations.

India's commitment toward IT should create many opportunities for U.S. IT companies through investments, joint ventures and export/import trade. Business sectors with the best prospects include computer software and services, telecommunications services and equipment, and computers and peripheral equipment. However, the Indian market also holds many challenges for small-to medium-sized companies. Understanding local customs and business practices may require partnerships with local firms, or relationships with larger multinational firms. In some cases, local agents or distributors may be sufficient. Interested companies should contact the U.S. Department of Commerce for information on local markets and suggestions on developing market entry strategies.

CHAPTER 1: INFORMATION TECHNOLOGY IN INDIA

The Indian market for information technology (IT) products and services is poised to expand over the next few years. Both the government and the private sector have increased their use of computers and a surge of interest in the Internet and electronic commerce is fueling market growth. The IT market (computers, packaged software and computer services) in India totaled \$3 billion in 1999 and is expected to grow to nearly \$7 billion by 2002, according to the International Data Corporation.

To enhance the development of its IT sector, the Government of India (GOI) created a National Task Force on Information Technology and Software Development in May 1998. The task force has formulated the draft of the National Informatics Policy. Its action plans recommend strategies to use IT in all areas of the national economy, to accelerate the flow of investment into the IT sector, and to increase Indian exports of IT products and services by 2008. The July 1998 plan set a target goal for \$50 billion in annual exports of IT software and services and an acceleration in the rate of personal computer (PC) penetration in the country from the 1998 level of one per 500 to one per 50 people, along with a universal access to Internet and the development of extranets/intranets by the year 2008. Objectives in the area of telecommunications include the acceleration of basic infrastructure development to allow the establishment of nationwide fiber optic, satellite, and wireless communications

policies and competition to accomplish this goal.

A new Ministry of Information Technology (MIT) was established in 1999, and the GOI has since formed a cabinet committee on IT. The MIT has responsibilities for IT policy, the development of electronics, all matters concerning computer-based information technology products and software, promotion of the Internet, e-commerce, IT education, and the National Informatics Center.

The Information Technology Bill

The GOI has resolved to make India a global superpower in the area of information technology. To accomplish this goal, revisions and additions are being made to existing policies and procedures for removing bottlenecks that restrict trade, investment and industry growth. Supported by these new policy initiatives, the Indian Parliament passed the Information Technology Bill 2000 to define and regulate transactions involving electronic trade and commerce. The Bill provides a legal framework to eliminate barriers resulting from uncertainties over computer-generated documents, writing and signature requirements, and promotes the development of the legal and business infrastructure necessary to implement electronic commerce. Penalties for computer crimes, such as unauthorized access to computer networks and databases, introducing computer viruses or causing disruption or

networks and to promote more liberal

damage to computer systems, copying of software, electronic forgery have also been included in this Bill.

Trade Policy

India embarked on a series of economic reforms in 1991 in reaction to a foreign exchange crisis. Those reforms have included changes in foreign investment rules, reductions in tariffs and other trade barriers, reform of the financial sector, and adjustments in government monetary and fiscal policies. While foreign direct investment flows have risen since reforms began, India's economic growth is constrained by inadequate infrastructure, cumbersome bureaucratic procedures, and high interest rates.

India's trade has increased significantly since 1991, largely as a result of staged tariff

reductions and elimination of non-tariff barriers. The outlook for further trade liberalization is mixed since India has agreed to eliminate quantitative restrictions on imports of about 1,420 consumer goods by April 2001 to meet its WTO commitments. On the other hand, the government has imposed additional import duties of 5 percent on most products plus a surcharge of 10 percent over the past two years. U.S. exports of all commodities to India reached \$3.4 billion in 2000, while U.S. imports totaled \$10.7 billion. As a result, the U.S. trade deficit with India reached \$7.3 billion. U.S. exports of computer equipment continued to show strong growth in 2000, rising nearly 66 percent to \$226 million, causing the U.S. computer trade surplus with India to nearly double (see Table 1).

Table 1. U.S. - India Trade in Computer Products
(millions U.S. dollars)

U.S. Exports	1998	1999	Percent Growth	2000	Percent Growth
Computers	49.7	63.3	27.4	110.5	74.6
Peripheral equipment	49.6	73.0	47.2	115.3	57.9
Total	99.3	136.3	37.3	225.8	65.7

U.S. Imports	1998	1999	Percent Growth	2000	Percent Growth
Computers	-	0.9	-	1.1	22.2
Peripheral equipment	51.0	17.9	-64.9	10.2	-43.0
Total	51.0	18.8	-63.1	11.3	-39.9

Trade Surplus	48.3	117.5	143.3	214.5	82.6
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Source: Compiled from statistics from the U.S. Department of Commerce

Trade Agreements

In March 1997, India officially joined as a

signatory the Information Technology Agreement (ITA) and is committed to eliminate all tariffs on ITA products by 2005. In addition, the GOI budget for 1997-1998 eliminated duties on both systems and application software. The GOI budget for 2000-2001 went further and reduced import duties on a number of items used in the IT sector (See Table 2). However, tariffs are still high enough to present serious impediments to U.S. trade. India also maintains a variety of additional or countervailing duties, raising effective tariff rates well above the tariff ceiling for some products. For example, the current tariff on computers includes a basic tariff rate of 15 percent, but with additional special duties and surcharges, the effective rate is nearly 39 percent.

U.S. India Ties Strengthening

The U.S. and Indian Government agreed in October 2000 to launch an Information Technology Initiative (ITI) that would increase cooperation between the U.S. and Indian public and private sectors to promote the use of information technology and electronic commerce. An outgrowth of the U.S.-India Commercial Dialogue, the initiative was developed in close consultation with the business communities in both countries. As a result, the two governments agreed to a joint e-commerce program. This will include joint efforts to organize e-commerce seminars for small business, video conferences between key U.S. and Indian government and private sector representatives, and an IT/telecom matchmaker trade delegation. Plans include working with the U.S.-India Business

Table 2. GOI Custom Duty Reductions on Selected IT Products

Product	1999	2000
	From (percent)	To (percent)
Computers	20	15
Motherboards	20	15
Floppy diskettes	20	15
Semiconductor components	15	5
Microprocessors	5	0
Memory storage devices	5	0
CD ROMs	5	0
Integrated circuits and micro assemblies	5	0
Cathode ray tubes for monitors	5	0

Source: Union Budget 2000-2001, Ministry of Finance, Government of India

Council (USIBC) on certain events by collaborating on its broader Indo-U.S.

Knowledge Trade Initiative.

Alliances between the USIBC and the Federation of Indian Chamber of Commerce and Industry (its Indian counterpart) have agreed to pursue initiatives to expand bilateral IT trade. One such agreement is the establishment of a Indo-U.S. Science and Technology Forum to encourage and promote the interaction of government, academia, and industry in science and technology related areas. The Forum will promote research and development, the transfer of technology, the creation of a comprehensive electronic reference source for the exchange, and dissemination of information on Indo-U.S. science and technology cooperation.

Similarly, a renewed commitment in March 2000 between the U.S. and India to engage in economic and commercial discussions resulted in the bilateral economic dialogue, which is part of the broader "institutional dialogue." The forum consists of three cabinet-level dialogues on finance and economics, trade, and commerce. The commercial dialogue has a public/private sector format.

Computer Hardware

The computer systems and peripheral equipment sector is one of the primary growth drivers of the Indian IT market. Personal computers make up the bulk of the computer market, and untapped end-user segments such as the small office/small business and the home markets will continue to offer opportunities for growth.

The government has traditionally been recognized as a key driver of domestic IT

demand in India, with spending of about 28 percent of the total. Other major sectors using computers and peripheral equipment include insurance, financial institutions, energy, defense, ports, customs, telecom and

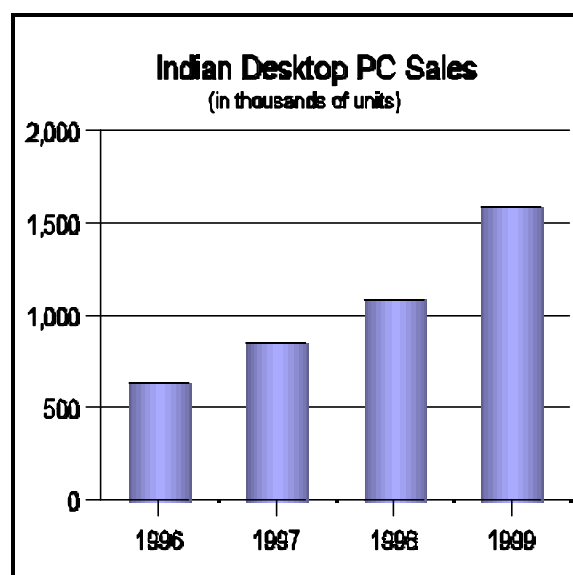
education. Large sectors, but with low IT penetration, such as textiles and healthcare are being encouraged by the government and the private sector to adopt IT.

The average annual growth of PC demand by unit volume exceeded 40 percent from 1996 to 1999. Despite this significant growth, only a small percentage of India's one billion population own PCs. In 1998-99, the PC penetration rate was only 3 per one thousand people.

On a regional basis, India's computer market can be broken down into four geographic regions: the west, centered on Mumbai; the north, centered on New Delhi; the east, centered on Calcutta; and the south, centered on Bangalore. Mumbai is India's financial capital and accounted for 35 percent of its PC sales in 1997. The high tech centers of Chennai and Bangalore in the south, and the northern region each accounted for 25 percent of PC sales. The eastern region, with agriculture and mining as primary industries, had lower PC sales of about 15 percent of the total. Skoch Consultancy revealed in its recent *Demographic Analysis of the Indian PC Market* that smaller cities and towns are accounting for an increasing share of PC sales. According to the survey, 47 percent of the PCs sales in 1999 were purchased in non-metropolitan cities, compared with 20 percent in 1997. The shift is an indication of increased computer awareness and more widespread usage within the Indian population.

Indian desktop PC sales showed healthy growth in 1998, rising 28 percent over 1997 to exceed 1 million units for the first time, according to the Manufacturers Association of Information Technology (MAIT) (see Figure 1.) Sales continued to be robust in 1999, rising 37 percent to 1.4 million units. Intel has captured the microprocessor market with its Pentium II, Pentium III and Celeron brands, which are installed in about 80 percent of the PC units. The server market grew 58 percent to 56,760 units, a reflection of the growing interest in networking and the Internet. Portable computer sales exceeded 41,000 units in 1999, up 82 percent over the 22,925 unit level in 1998.

Figure 1



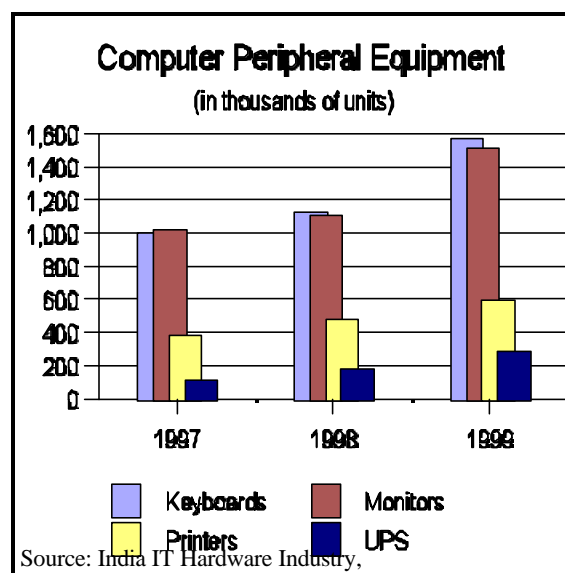
Source: India IT Hardware Industry, IMI 000723, US&FCS

To achieve higher PC penetration rates, vendors will have to experiment with and embrace more innovative marketing techniques, since the purchase of a PC is ranked as 12th in importance after other durables such as a car and an air conditioner, according to the Indian Market Research Bureau (IMRB). Lower PC prices, financing

options, bundling with Internet service, and even free PCs for Internet access are among the new methods suggested to achieve this goal.

In the computer peripherals sub-sector, printer sales rose 24 percent to 539,910 units in 1999. Non-impact laser units increased 19 percent, inkjet printers were up by 23 percent and dot matrix printers rose 26 percent. Keyboards and monitors both registered sales of about 1.5 million units, and uninterruptible power supplies (UPS) rose 60 percent to 288,000 units (see Figure 2).

Figure 2



Source: India IT Hardware Industry, IMI 000723, US&FCS

The Indian computer industry has over 135 major hardware suppliers supported by over 800 ancillary units and small vendors engaged in subassemblies and equipment manufacturing. India's strength lies in its ability to design and integrate computers rather than manufacture components. Many

multinational computer companies have a strong presence in India. These include Compaq, Dell, IBM, Hewlett Packard, NEC, Toshiba, and AT&T.

Software

India is one of the world's leading offshore software development centers with the majority of industry revenues coming from consulting services, projects and turnkey assignments. In 1998-99, about 20 percent of the U.S. Fortune 1000 companies outsourced their custom software requirements to India. With a steady annual average growth rate of 50 percent between 1996-1999, India's software industry has reached \$3.9 billion in sales, according to the National Association of Software and Service Companies (Nasscom) (see Figure 3). In addition, in-house development by many large commercial/corporate end-users was estimated at \$700 million for 1998-99. Demand for Y2K remediation boosted India's software industry revenues and also highlighted its status as a leading software and services supplier. Recent data from the Carnegie Mellon University shows that India (and U.S.-owned subsidiaries located there) accounts for over 50 percent of the world's software development facilities rated at Level 5, the highest level on its 1 to 5 maturity scale.¹ While highly skilled in code programming, software suppliers are incorporating other software applications such as Internet and e-commerce-related products and services into their product mix.

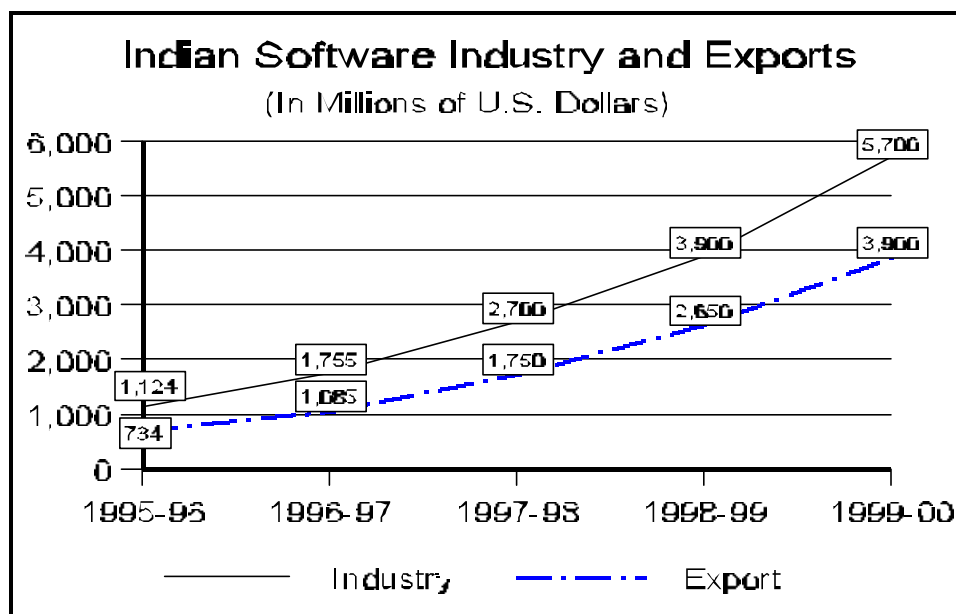
In 1999, industry sources estimated that

companies employed between 250,000 and 280,000 software engineers, an increase of about 25 percent from the previous year, making the software industry among the fastest growing sectors in the Indian economy. Revenues of the software industry are expected to increase 46 percent to \$5.7 billion in 1999-2000.

India's domestic software market has shown steady growth from 1995-96 to 1998-99, rising at an annual average growth rate of 36 percent to \$1.2 billion. Plans for increased government spending on IT, a zero import duty on software, and new purchasing channels through the Internet should have a positive effect on the domestic market. Major end use markets include banking, government, insurance, and the small office/home office segments. Sales are projected to total about \$1.7 billion in 1999-2000. However, strict enforcement of copyright laws and improvements to the telecommunications infrastructure are needed to sustain market growth.

¹Process maturity scale established by the Software Engineering Institute (SEI) at Carnegie Mellon University. Updated June 30, 2000.

Figure 3.



Source: Nasscom

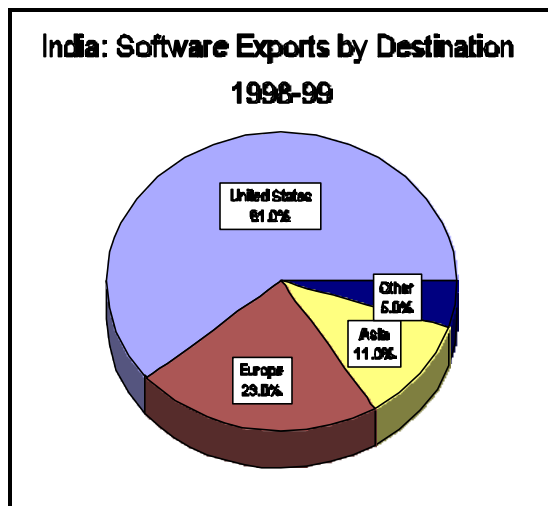
Intellectual Property Rights

Under pressure from its own domestic industry and the United States, India strengthened its copyright law in May 1994, placing it on par with international practice. The law reflects the provisions of the Berne Convention on copyrights, to which India is a party. Under the "Special 301" provisions in U.S. trade law, USTR identifies those countries that deny adequate and effective protection for intellectual property rights. Countries with the most onerous practices are designated as "priority foreign countries", subject to section 301 investigations. Based on its improved copyright protection, India's designation as a "priority foreign country"

under Special 301 was revoked and India was placed on the "priority watch list" to be monitored closely for progress.

According to the International Planning and Research Corporation, India's software piracy rate has dropped modestly from 69 percent in 1997 to 61 percent in 1999. However, this translates into a \$185 million (1997) and \$251 million (1999) loss to the industry. Although this rate is high, India remains below other countries in the region with worse piracy rates, such as China, Indonesia, and Vietnam.

Figure 4



Source: Nasscom

Software Exports

India supplied \$2.6 billion in software exports, which represented more than 18 percent of world exports of customized software applications in 1998-99, according to Nasscom. The United States is the main market for Indian software, accounting for 61 percent of the export total (see Figure 4). Europe followed as the second largest export market, with 23 percent. Market opportunities have been expanding in Asia and Latin America, and business prospects are also being explored in South Africa and Eastern European countries.

India's overall share of the world software market remains low, estimated at less than 1 percent, but the country has an advantage over many other nations in software development, services and exports. This success is due to the fact that India possesses the world's second largest English-speaking scientific workforce. The availability of low cost, talented programmers gives India a competitive advantage when compared to the United States and Europe.

Based on measures adopted by the National IT Task Force, which include increasing productivity and sustaining products with an ISO 9000 certification and SEI level 5 standards or equivalent in quality, India software exports are projected to increase at a rate of 60 percent to reach \$6.3 billion in the year 2000-01. The Task Force has set a target of \$50 billion in annual software and services exports by 2008. However, in order to sustain this level of growth, infrastructure assistance like that provided by the Software Technology Parks of India (STPI) is critical. The STPI provide facilities that include computers, high speed data communications links, Internet, teleconferencing and fax equipment, and backup power.

Internet

The GOI approval of a new Internet policy to allow 100 percent foreign equity investment for Internet Service Providers (ISPs) should expand commercial Internet access throughout India. The government had previously set a 49 percent maximum on equity investment in Indian ISPs. Another major initiative freeing ISPs to set up their own gateways for international connectivity should further spur competition in this sector.

The Government-owned international telecommunication service provider, Videsh Sanchar Nigam Ltd (VSNL), established Internet service in 1995 and was the only commercial ISP in the country. Service was available only in select urban cities with 150,000 subscribers, despite the large scale demand nationwide. The entry of private Indian ISPs, like Mantra Online and Satyam Infoway has forced VSNL, the largest state-owned ISP, to become more competitive.

While it has a subscriber base of over 300,000 customers, it is considering a 50 percent reduction on the Internet tariff/dial-up access charges and the introduction of free surfing at night beginning with a June 2000 subscriber promotion. VSNL retains its monopoly on Internet gateways, but 17 other ISPs have received approval to open their own gateways which could force VSNL to reduce fees even further. Of the 300 ISP licenses issued by the GOI, 100 have started operations.

Also in response to India's new Internet policies, U.S. Internet companies such as AltaVista, Lycos and Yahoo launched country-specific sites in India in the summer of 1999. America Online is expected to launch operations in 2001, and Microsoft is testing an Indian version of MSN.com. Although the Indian Internet market is small, U.S. portals are establishing themselves and

learning more about local customs and the marketplace (see Table 3).

Statistics for the number of Internet subscribers and users vary by analysts, with most estimates indicating that a small minority of the population has access to the Internet in India. Estimates range from the International Data Corporation's 500,000 to Nasscom 800,000 subscribers, both for 1999. All estimates, however, indicate that India has less than a 1 percent Internet penetration rate. Internet use is more than three times the subscriber rate, with estimates between 1.4 million and 2.6 million, due to the commonplace sharing of subscriber accounts. Approximately 85 percent of Internet use takes place in eight cities, with about 65 percent concentrated in Maharashtra, New Delhi and Mumbai. High amounts of sharing occurs in places like Pune, Calcutta and Bangalore where a high proportion of people access the Internet

Table 3. Recent U.S.-Based Portals In India		
Company	Launch Date	
AltaVista	July 2000	Search engine, index of Indian Web sites, free Web-based e-mail
Lycos	July 2000	Localized content, e-mail services
MSN	Testing Beta version	News and information with local content, Web-based "Hotmail"
Yahoo	June 2000	Working with media companies to provide content and news. Directory of English-language Web sites, local pages for 20 Indian cities
Source: Company announcements, The Industry Standard, August 28, 2000		

from educational institutions. Cyber cafes

and kiosks also offer opportunities to access

the Internet. According to a Gartner Group survey, 60 percent of Indian users surf from cyber cafes. However, rural India is virtually isolated from the worldwide web. Cost of Internet access, reported to be approximately \$42 for 20 hours/month, or 8 percent of the average GDP per capita income, limits access by income level.

The number of Internet users worldwide is constantly growing, but the top 15 countries account for more than 80 percent of total usage (see Table 4). The growth rate among the more industrialized countries is expected to flatten, while that of India is expected to increase sharply. Although India has yet to make this list, some research analysts forecast that India could be second only to China in terms of Internet usage in Asia in the future. However, this growth would be dependent on continued penetration of PCs and improvements to the telecommunications infrastructure. On a regional basis, India is currently the fifth largest Internet user market in Asia Pacific, after China, Korea, Australia and Taiwan.

Telecommunication infrastructure is an important element in Internet growth. Until recently, Indian Internet users had to rely on slow connections via the telephone system. According to World Bank statistics, India had 22 telephones per 1,000 people in 1998, and 104 per 1,000 people in the larger cities, a factor that limited Internet growth. Other contributing factors that slowed Internet growth are low installed base of computers, (3 per 1,000 people), high computer prices, the high cost and tariffs associated with

fixed lines for Internet connection to competing ISPs.

Internet access via cable and using DSL (digital subscriber line) is at the experimental stage and limited to a few areas. However, given the extent of cable infrastructure in India when compared to Internet usage, cable Internet access holds promise.

Bandwidth

While Internet connectivity is growing in India, growth is not only measured by an increase in the number of users, web sites, or customers, but also by an increase in demand for bandwidth. As a result, major improvements to the country's inadequate IT infrastructure are needed. India's bandwidth² – the cyber superhighways on which data travels – is lacking by international standards and impedes India's progress in reaching global standards. This lack of bandwidth capacity will hinder the upsurge in Internet usage. Nasscom estimates revealed that the current 325 mega bytes per second (MBPS) of international bandwidth available for Internet from India is far short of demand since business applications and dot com industries needs have soared to 5 giga bytes (GB). Demand is projected to grow to 10 GB by the end of 2000. In comparison, China has an international bandwidth of 55 GB and Japan 160 GB.

Internet access, and delayed provision of

²bandwidth - The speed and amount of data that can be transmitted in a fixed amount of time on telecommunication lines. For digital devices, the bandwidth is usually expressed in bits per second (bps) or bytes per second (BPS).

Table 4.

Top 15 Countries With the Most Internet Usage
Year-End 2000 (estimated)

Rank	Country	Internet Users (millions)	Share of Total (percent)
1	United States	135.7	36.2
2	Japan	26.9	7.2
3	Germany	19.1	5.1
4	United Kingdom	17.9	4.8
5	China	15.8	4.2
6	Canada	15.2	4.0
7	South Korea	14.8	4.0
8	Italy	11.6	3.1
9	Brazil	10.6	2.8
10	France	9.0	2.4
11	Australia	8.1	2.2
12	Russia	6.6	1.8
13	Taiwan	6.5	1.7
14	Netherlands	5.4	1.4
15	Spain	5.2	1.4
	Other	66.5	17.7
	World Total	374.9	100

Source: eTForecasts , Computer Industry Almanac, Inc.
Cyberatlas.internet.com

VSNL recently approved the formation of a committee, Operation Bandwidth, to oversee the country's demand for bandwidth. The committee, which includes a mix of government and private industry organizations, is working to acquire international capacity for leased lines and Internet use ahead of demand. As a result, VSNL has started to acquire Internet bandwidth on a large scale. For example, 155 Mbps are being acquired from Mumbai and Chochin via Optical Fibre systems to the U.S. east coast and west coast, respectively. In addition, five bearers of 34/8 Mbps are being acquired via satellite to provide an additional satellite capacity of 200 Mbps.

These capacities were scheduled to be put in place by fall of 2000 and would constitute an additional 510 Mbps of international capacity. VSNL customers may be offered "bandwidth on demand" within a prescribed period for connections sought after October 2000 and will likely be provided with links up to 2 Mbps within 60 days. Higher speed links, up to 155 Mbps, should be provided within 90 days.

Additionally, Nasscom recommended, under the Operation Bandwidth initiative, that the GOI allow private sector involvement to increase the Internet bandwidth in the country. One change would allow international leased lines to be connected to the public switch telephone network. Another recommendation is for a cut in the tariff for international connectivity. For example, the charge for a 64 Kbps link to India from the United States is about \$5,000 per month, while the cost of 64 Kbps link from the United Kingdom to the United States is about \$2,000.

Regions with poor telecommunications

infrastructure could benefit from more resourceful ways to obtain Internet connections. Broadband access via cable lines is an important avenue for Internet growth because there are more televisions and cable connections in India than there are PCs (see Table 5.)

Another innovative way of bringing the Internet more cheaply and quickly to India's rural population is through its railway network as a conduit for communications cables. The ability to reuse the existing cable systems will avoid the time and cost of laying a new cable network. Development plans include the addition of cyber café kiosks to stations along the track for use by local people without their own computer equipment. With railway stations about every 8 km, the cost is estimated to be in the affordable range for local people. However, India's erratic electricity supply is an issue and back-up batteries, or solar panels would add to the overall costs.

E-mail booths are another interesting concept as way to bring Internet to thousands of people in India's rural areas. The booths, complete with video cameras, will be capable of sending or receiving three-minute messages, including video image and voice, through an e-mail account.

Table 5.			
Technology Penetration in India, China, and the United States, 1998 (number per thousand people)			
	India	China	United States
Telephone sets	69.0	272.0	847.0
Cable subscribers	18.8	40.0	244.3
Telephone mainlines	22.0	70.0	661.0
Mobile telephones	1.0	19.0	256.0
Personal computers	2.7	8.9	458.6
Source: 2000 World Development Indicators, The World Bank Group			

Electronic Commerce

Although India faces many obstacles before electronic commerce (e-commerce) becomes an important economic engine, both the government and private sector are developing solutions to address some of these limitations. One significant step was the May 2000 approval of the IT Bill which should establish the legal and regulatory framework for e-commerce. The Bill paves the way for a system of electronic records, electronic/digital signatures, payment gateways and certifying authority. The GOI also eased restrictions on foreign direct investments (FDI) in the e-commerce sector by raising the limit from 49 percent to 100 percent. The FDI cap on e-commerce for business-to-business (B2B) transactions was also removed with the condition that these foreign companies, if listed on foreign stock markets, would divest 26 percent of equity in favor of Indian investors within five years.

The opportunity for e-commerce should expand with the growth of Internet use. According to a 1999 report by IDC, e-commerce in India is rapidly emerging and has registered transactions worth \$30 million, with projections for \$575 million by financial year 2002-3. Nasscom reports more optimistic figures estimating e-commerce transactions worth more than \$800 million in 2000-01, up from about \$100 million in 1999, and projects growth to \$2.5 billion by 2002 (see Table 6).

As shown in Table 6, business-to-business (B2B) transactions constitute the majority of e-commerce transactions in India. More than one dozen B2B portals are currently in operation, with about 6,000 companies listing goods through the sites. An important element in determining success of B2B portals is the ability to encourage clients to regularly use the site to conduct

Table 6. India: E-Commerce Transactions (in U.S. dollars millions)			
Year	E-Commerce Transactions	Business to Business B2B	Business to Consumer B2C
2000-01	\$814 million	\$744 million	\$70 million
Source: Nasscom			

large volumes of business. Links between remote offices to corporate headquarters and manufacturing facilities with sales units are becoming commonplace. The recent approval for 100 percent FDI in B2B ventures should speed up the development in this sector. Nasscom estimates B2B transactions to be in the \$700 million range for 2000-01.

Challenges still exist in the area of business to consumer (B2C) e-marketing. A survey conducted by the Indian Market Research Bureau revealed that only 26 percent of its respondents were aware of the shopping possibilities available on the Internet. The Gartner Group also notes that only 2 percent of Indian Internet users have engaged in B2C e-commerce. Since the 2-5 percent commission paid by buyers and sellers listed on a site is the primary source of revenue, some Indian firms are looking at alternative ways to raise money, including listings on the U.S. Nasdaq market.

Another limiting factor in India's B2C e-commerce sector is the relatively small number of credit card holders in India – only about 3 percent of the population. The lack of secure on-line payment gateways and the need for uniform credit agencies also creates a variety of payment challenges. Meanwhile, the distribution of on-line purchases could be

further complicated by India's complex postal system and an uncertain regulatory environment.

E-banking efforts are hindered by weak inter-branch connectivity and inadequate computerization. For example, the State Bank of India, the largest public sector commercial bank has computerized only 22 percent, or less than 2,000, of its 8,982 branches. Automated teller machines at most public sector banks are restricted to a limited number of branches, and web sites provide only basic information on products and services. However, a recent McKinsey survey reports that 27 percent of its survey respondents wanted access to on line financial services.

The distinction of launching Internet banking in India goes to ICICI Bank. It introduced its Infinity Internet banking service in October 1997, using the BankAway software developed by Infosys, a domestic company. Citibank and HDFC Bank followed with their Internet banking services in 1999. Internet banking permits foreign banks to widen their reach without opening additional branches, an advantage because of tight government regulations on branch expansion.

Still, infrastructure costs of graduating to e-banking are very high. Automation is needed

on front-end systems that interface with the customer, as well as the back-end systems. Investments in security software, Internet banking software, and security hardware are also required. Some banks with experience in the use of technology are also exploring the use of the wireless application protocol (WAP), which allows users to surf the Internet on their mobile telephones.

The development of e-banking will be initially limited to a small number of strong and efficient banks that can compete internationally and leverage e-banking in such a way as to create their own one-stop finance portals that link banking to e-commerce. But, given overall Internet penetration rates, traditional branch banking is expected to co-exist with high tech bank offerings.

Statistics confirm the fact that the opportunity base for e-commerce exists in India. However, appropriate investments in effort and resources by vendors, industry players, and the government are necessary to successfully move the industry forward. The GOI through its IT Task Force aims to promote IT. Recent GOI initiatives clear the way for a more open playing field for foreign company participation. Furthermore, India regulators are opening national long distance telephone services to competition by private companies. This policy change would allow foreign investors to hold up to 49 percent of equity in companies offering nationwide long distance service. However, the growth in the IT and telecommunications sectors will be dependent on requirements such as access lines and national backbone connectivity.

During the WTO Seattle Ministerial, Indian representatives voiced opposition to endorsing the position that existing WTO

rules cover e-commerce and that the moratorium on e-commerce duties should be made permanent. At a December 2000 WTO General Council meeting, Indian representatives opposed some key principles of the E-Commerce Work Program, including recognition that e-commerce falls within the scope of existing WTO rules and the establishment of an ad hoc task force on e-commerce within the WTO. Some Indian industry representatives expressed fear of losing business to foreign firms selling to Indian customers over the Internet. Other Indian companies are concerned that they do/will not have adequate access to the Internet, and that e-commerce in India cannot thrive until the domestic banking, telecommunications, and transportation sectors are improved.

CHAPTER 2: MARKET OPPORTUNITIES AND MARKET ENTRY STRATEGIES

Best Prospects for U.S. Exporters

New opportunities for U.S. businesses continue to emerge in India's IT market. Deregulation and liberalization of the Indian economy puts into place many features of a market-driven system. This aspect opens up new opportunities for foreign businesses. According to the FY 2001 Country Commercial Guide for India, prepared by the U.S. & FCS, the top four best prospect sectors are:

(1) *computer software and services*: Increased government and private sector spending on IT, new demand for Internet and IT-enabled services, are factors that contribute to the sector's growth. Over 158 new software products were launched by foreign companies in the Indian domestic market during the first half of 2000. The most promising sub-sectors include: networking products, CAD/CAM software, financial accounting packages, enterprise resource planning packages, relational database management systems, and educational software. Together these sub-sectors accounted for about \$6 billion in 2000.

(2) *telecommunication services*: The Government of India issued a new telecom policy in 1999 and made several announcements during the summer of 2000 to further liberalize the market. The domestic long distance market was opened to private sector participation on August 15, 2000 and the state monopoly on international telecommunications services will end by April 2002. India's international telecom traffic is growing at nearly 20 percent per

year. The growth potential is not limited to the basic telephone services, but extends across a wide range of value added services, as well as services using the latest technologies, including cellular, Internet, radio trunking, and global mobile personal communication by satellite.

(3) *telecommunication equipment*: India's National Telecommunications Policies of the 1990's produced broad liberalization of the sector by allowing private companies to manufacture telecom equipment, permitting imports, and lowering of import tariffs. The Department of Telecommunication's 1997-2007 plan estimates a demand requirement of approximately 64 million telephones, with about one-third to be provided by private companies. The latest telecom policy targets a telephone density of 15 per 100 people by 2010, up from its current penetration rate of 2.5 per 100 persons.

(4) *computers and peripheral equipment*: Growth in demand for PCs from both the government and the private sector, and the rising popularity of the Internet are major factors driving the growth of India's IT industry. About 45 percent of PC buyers are first-time buyers. In addition, the computer peripheral sector grew by 59 percent in 1999, led by increased sales of non-impact printers. The most promising sub-sectors include, desktop PCs, notebook or portable computers, servers, printers, keyboards, and monitors.

Distribution Channels

Although India's rapidly growing population presents limitless opportunity, many Indian and foreign companies have discovered that

it is a mistake to offer global brands at global prices, without any customization. Suitability and adaptation to Indian preferences and conditions are perceived as significant benefits by Indian consumers and an important factor to be taken into account while designing a sales strategy for this country. Care should be given to developing an efficient distribution network because India is a market with poor infrastructure and logistics.

While selling in the Indian market can be a complicated and difficult experience for new entrants, this can be avoided if, at the outset, the market opportunity is assessed accurately and the capabilities of local competition are not underestimated. Only in unusual circumstances should new foreign entrants create a new and independent sales infrastructure, because it is very expensive in the short run, and requires sustained investment to build over the long run, even if the product is successful.

Most Indian manufacturers use a three-tier selling and distribution structure: distributor, wholesaler, and retailer. In recent years, an increasingly competitive market has led to the emergence of independent distribution and logistics agencies. As a result, marketers are increasingly outsourcing key functions for product distribution.

There are no major national store chains, but department stores and supermarkets are growing in many urban areas. India has both organized and unorganized channels for selling goods. However, with government policy liberalization resulting in lower taxes and customs duties for IT products, the volume of business in smuggled goods has fallen significantly. Computer parts, cellular telephones and other consumer goods once routinely sold through thriving unorganized

channels are now sold in India through direct channels. These more organized channels of distribution and support are used for products such as computer hardware, software, and peripherals ranging from commodity products to high-end IT equipment. The typical distribution structure has been two-tiered with a distributor servicing dealers and retailers. Many U.S. IT companies have a strong presence in the Indian marketplace.

In addition to the traditional selling techniques, the Internet is also gaining importance as a selling method. As the number of Internet users continues to increase, the Indian e-tailing market will also expand. Although e-tailing currently constitutes only 10-15 percent of the value of e-commerce in India, e-commerce is projected to grow by 30 times in the next three years. Similarly, industry experts believe that on-line business-to-business (B2B) commerce will expand.

Market Entry Strategies

Large multinational firms can make strategic investments in foreign markets through manufacturing subsidiaries, direct sales, and joint ventures based on brand and product recognition. However, for small-to medium-sized firms, careful research and planning regarding market entry strategies is recommended before making a final choice. The Commercial Service through its seven offices in India can assist U.S. companies with counseling and advice. In addition, business groups and local trade associations can provide needed assistance.

With the gradual opening of markets in line with India's WTO commitments, U.S. exporters should find a high response rate from potential agents and distributors for many products. The agent/distributor

approach can be a cost-effective way to gain entry into a new market. Local representatives can assist U.S. firms by providing knowledge of the domestic market, regulations and tax laws. However, agents and distributors should be qualified to ensure they understand the product and can provide after sales service if necessary. For further information on selecting an agent or distributor see India's Country Commercial Guide. U.S. companies can also take advantage of the Agent/Distributor Service offered by the Commercial Service.

Joint venture/licensing: A joint venture company is generally formed under the Indian Companies Act, and is jointly owned by an Indian and a foreign company. This type of arrangement is common because India encourages foreign collaborations to facilitate capital investments, import capital goods and the transfer of technology. Joint ventures can be financial, technical or techno-financial. Software development is among India's 35 high priority industries (called Annexure III industries) where investment is sought on a priority basis.

Overseas companies, which do not choose to set up a subsidiary, or to form a joint venture with an Indian partner, can establish one of the several types of offices. None of the following entities are permitted to acquire immovable property without prior approval. However, they are allowed to lease property in India for a maximum period of five years.

Liaison or representative office: Many foreign companies initially establish a presence in India by establishing a liaison or representative office which is not directly engaged in commercial transactions in India. These offices are usually opened to oversee their existing business interests, to promote awareness of their products, and to explore

further opportunities for business and investment. A liaison office cannot generate any revenue in India, or repatriate money out of India.

Branch office: A branch office, like a liaison office, is not an incorporated company, but an extension of the foreign company in India. A branch of a foreign company is limited to the following activities: representing the parent company, as buying/selling agent; conducting research for the parent company, provided that research results are made available to Indian companies; carrying out import and export activities; promoting technical and financial collaborations between Indian and foreign companies. Since business is actually conducted in India, a branch office is subject to tax and is allowed to repatriate the profits generated from the Indian operations to the parent company after payment of taxes.

Project office: A project office is a method to establish a business presence for a limited period of time, usually to undertake projects in India awarded to the parent company.

Business centers: Given the shortage of good commercial office space at reasonable prices in the largest cities, business centers are a viable option for new companies wanting to establish a physical presence. Facilities are ready to move in, wired for communications, and air-conditioned. Billing is normally done on a monthly basis; and for long-term use, discounts are available. For selected industry sectors like software and biotechnology, the state governments are creating special technology parks.

Trade Shows

Trade shows and trade missions are an excellent way for U.S. SMEs to learn about

India and introduce their technologies and products to the market. U.S. Department of Commerce personnel participate in many foreign trade fairs with, or on behalf of U.S. firms, offering companies exposure at prices often below regular trade fair participation costs. A partial list of IT-related trade shows in India is listed in the Appendix.

Also see the U.S. & FCS web site (www.usatrade.gov), and web sites of the Office of Information Technologies (www.exportIT.ita.doc.gov), and the Office of Telecommunications Technologies (www.telecom.ita.doc.gov), for upcoming events.

CHAPTER 3: THE ROLE OF THE U.S. DEPARTMENT OF COMMERCE

INTERNATIONAL TRADE ADMINISTRATION (www.trade.gov)

The mission of the U.S. Department of Commerce's International Trade Administration (ITA) is to assist U.S. companies export products and services and compete in foreign markets. Two ITA units responsible for export promotion are Trade Development (TD) and the U.S. and Foreign Commercial Service (USFCS).

TRADE DEVELOPMENT³

ITA's Trade Development unit is the Commerce Department's link to U.S. industry. TD provides industry and market analyses, export promotion services, advocacy for U.S. companies bidding on foreign government contracts, and support for trade negotiations. This unit offers an array of services to help small businesses increase their export potential.

Industry Expertise. TD's industry expertise encompasses nearly all U.S. business sectors.⁴ Industry sector specialists provide U.S. firms with information and analyses on domestic and foreign industry trends; foreign market conditions and opportunities for specific products or services; general exporting advice; information on foreign market tariffs and non-tariff barriers, and regulations; business and cultural practices;

and advocacy assistance. Each year, industry specialists profile these industries in the Department of Commerce publication *U.S. Industry and Trade Outlook*, describing current and future IT industry and market trends on a domestic and global basis. These specialists also continually expand and update their web sites with information on foreign markets and regulations, U.S. foreign policies that affect IT exports, trade events, and additional government and private-sector resources.

TD's industry expertise is also the primary source used by the President and the Office of the U.S. Trade Representative (USTR) in trade negotiations. TD's industry analyses, close work with industry representatives, understanding of issues such as restrictions on market access and product standards and testing, and knowledge of trade data help negotiators understand business priorities and problems and develop trade agreements that provide maximum benefit for U.S. firms. TD industry experts also help monitor and enforce foreign governments' compliance with trade commitments, working with other ITA units, including the US&FCS and Market Access and Compliance (MAC), and USTR.

TD's Information Technology Industries, which consists of three offices: the Office of Information Technologies (OIT), the Office of Telecommunications Technologies (OTT), and the Office Electronic Commerce (OEC); as well as the Office of

³More information on Trade Development can be found at <http://www.ita.doc.gov/td>

⁴Agriculture products and issues are the responsibility of the U.S. Department of Agriculture.

Microelectronics, Medical Equipment, and Instrumentations (OMMI) primarily focus on IT and telecommunications industry issues.

Office of Information Technologies

OIT supports the growth and competitiveness of the U.S. IT industries in foreign markets. Industry coverage includes the following IT industry segments: computers and peripherals, software (applications and operating systems, encryption/security software), networking equipment, Internet technologies, and e-commerce technologies.

To obtain more information, including a list of upcoming OIT-supported trade events, links to market information for India, or to locate OIT trade specialists, contact:

Office of Information Technologies (OIT)
U.S. Department of Commerce, Room 2806
14th & Constitution Avenue, N.W.
Washington, D.C. 20230
Tel: (202) 482-0571
Fax: (202) 482-0952
<http://exportIT.ita.doc.gov>

Office of Telecommunications Technologies

OTT's mission is to support the growth and competitiveness of the U.S. telecommunications equipment and services industries in foreign markets. Industry coverage includes wireless technologies such as cellular and personal communications equipment, cable and broadcast equipment; and wireline technologies such as customer premises equipment and telecommunications services.

To obtain more information, including a list of upcoming OTT-supported telecom events, or to locate OTT trade specialists, contact:
Office of Telecommunications Technologies (OTT), U.S. Department of Commerce, Room 4324 14th & Constitution Avenue, N.W.
Washington, D.C. 20230
Tel: (202) 482-4466

Fax: (202) 482-5834

<http://telecom.ita.doc.gov>

Office of Electronic Commerce (OEC)

The Office of Electronic Commerce (OEC) supports the growth and competitiveness U.S. firms seeking to enter specific foreign e-commerce markets. OEC also conducts general trade and policy analysis and research, including analyzing foreign countries' e-commerce laws and initiatives and comparing them to U.S. policy requirements. This is accomplished by participating in various fora, such as the USG's Interagency Working Group on Electronic Commerce, the Organization for Economic Cooperation and Development (OECD), the World Trade Organization (WTO), European Union, Asia Pacific Economic Cooperation (APEC) and Free Trade Area of the Americas (FTAA). This effort also includes overseeing the Administration's E-Commerce Joint Statements with other governments, managing the Industry Functional Advisory Committee on Electronic Commerce (IFAC-4), as well as participating in formal as well as informal policy dialogues with other nations.

OEC provides support for ITA's ongoing e-commerce export promotion initiative. This initiative seeks to expand U.S. exports, bring small business exporters into the global economy, and engage our trading partners in e-commerce issues. The Office also provides various technical services, such as video conferences, to bring together government policy and industry experts on various e-commerce issues.

To obtain more information, or to speak with an E-Commerce Trade Specialist, contact:

Office of Electronic Commerce (OEC)
U.S. Department of Commerce, Room 2003

14th & Constitution Avenue, N.W.
Washington, D.C. 20230
Tel: (202) 482-5908
Fax: (202) 482-5734
<http://www.ecommerce.gov>

Office of Microelectronics, Medical Equipment and Instrumentation (OMMI)

OMMI covers electronic components (such as electron tubes, printed circuit boards, semiconductors, capacitors, resistors, transformers, and connectors) and semiconductor manufacturing equipment. OMMI also covers several industry sectors with high IT content, including medical and dental equipment and electro medical apparatus, process control instruments, laboratory analytical instruments, optical instruments, and instruments to measure electricity and electrical signals.

To obtain more information, including a list of upcoming OMMI-supported trade events, or to locate OMMI trade specialists, contact:

Office of Microelectronics, Medical Equipment and Instrumentation (OMMI)
U.S. Department of Commerce, Room 1015
14th & Constitution Avenue, N.W.
Washington, D.C. 20230
Tel: (202) 482-2470
Fax: (202) 482-0975
<http://www.ita.doc.gov/td/ommi>

The International Trade Administration is dedicated to opening markets for U.S. products and providing assistance and information to exporters. Other ITA units include:

Trade Information Center (TIC). The TIC is a comprehensive resource for information on federal export assistance programs. It is an excellent first stop for new-to-export companies seeking export assistance. TIC specialist 1) advise exporters on how to find and use government programs; 2) guide businesses through the export process; 3) provide country and regional business counseling on standards and trade regulations, distribution channels, trade opportunities and best prospects for U.S. companies, foreign import tariff/taxes and customs procedures, and common commercial difficulties; 4) provide information on overseas and domestic trade events and activities; and 5) provide sources of public and private export financing. TIC trade specialists also advise exporters how to access reports and statistics from the computerized National Trade Data Bank (NTDB) and direct them to state and local trade organizations that provide additional assistance. To contact the TIC, call 1-800-USA-TRAD(E) (1-800-872-8723); fax (202) 482-4473; e-mail tic@ita.doc.gov; or visit its website: <http://tradeinfo.doc.gov>.

Advocacy Center. The Advocacy Center supports U.S. businesses of all sizes as they compete for projects overseas. The center aims to “level the playing field” by ensuring that when these companies participate in international tenders they are treated fairly and that their proposals are evaluated on technical and commercial merits. Advocacy assistance can include a meeting between a key foreign official and a U.S. government official, a phone call to a high-level foreign

official, a timely letter to a foreign government decision-maker, or a Cabinet or sub-cabinet level trade mission to a foreign country. Since 1993, the Advocacy Center has helped 110 SMEs win foreign government contracts valued at more than \$2.4 billion. For more information, visit the Center's website at <http://www.ita.doc.gov/td/advocacy>.

Small Business Program. The Small Business Program is ITA's focal point for trade policy issues concerning SMEs. The program brings the small business point of view to international trade policy discussions, primarily through the Industry Sector Advisory Committee on Small and Minority Business for Trade Policy Matters (ISAC-14). The Small Business Program also provides outreach to and plans events for small, women-owned, and minority-owned firms.

Industry Consultations Program. (ICP) The ICP is comprised of 17 Industry Sector Advisory Committees on Trade Policy Matters (ISACs), representing 17 industry sectors of the U.S. economy; and four Industry Functional Advisory Committees on Trade Policy Matters (IFACs), that address cross cutting issues affecting all industry sectors -- customs, standards, intellectual property rights, and e-commerce. Advisors on these committees have direct access to trade policymakers at the U.S. Department of Commerce and USTR, and develop their industry's positions on U.S. trade policy and negotiation objectives. For more information, see <http://ita.doc.gov/td/icp>.

Export Trading Companies and Trade Intermediaries. The Office of Export Trading Company Affairs (OETCA)

promotes the formation and use of export trade intermediaries and the development of long term joint export ventures by U.S. firms. OETCA administers two programs available to all U.S. exporters or potential exporters. 1) The Export Trade Certificate of Review program provides antitrust protection to U.S. firms for collaborative export activities. 2) The U.S. Export Yellow Pages™ directory, designed to assist U.S. trade intermediaries interested in exporting. For more information, see <http://www.ita.doc.gov/td/oetca>.

Market Development Cooperator Program (MDCP). The MDCP is a competitive matching grant program that builds public-private partnerships by providing federal assistance to nonprofit export multipliers, such as states, trade associations, and chambers of commerce. MDCP awards help fund the start-up costs (particularly for SMEs) of new export marketing ventures which these groups would not undertake without federal government support. For more information, see: <http://ita.doc.gov/td/mdcp>.

THE U.S. AND FOREIGN COMMERCIAL SERVICE (US&FCS)

ITA's US&FCS⁵ assist U.S. firms in realizing their export potential by providing counseling, international market research, assistance in locating international contacts, matchmaking services, support of trade events, and advocacy services. US&FCS maintains a worldwide network of trade experts located in more than 100 cities in the United States and more than 70 countries overseas.

⁵More information on US&FCS can be found at <http://www.usatrade.gov/>.

International Operations.

US&FCS offices are located primarily in the U.S. embassies and consulates and are valuable connections to overseas markets. US&FCS staff are industry focused and can offer expert advice on the business practices, cultures, and languages of their specific country or region. They offer many products and services to help U.S. firms enter the market or expand their sales. Activities include the collection of specific industry and market information, identifying trade and investment opportunities, establishing key industry and foreign government contacts, helping match U.S. suppliers with overseas buyers, and organizing or facilitating trade events.

Domestic Operations.

US&FCS domestic offices provide export counseling and marketing assistance to the U.S. business community through 1,800 trade experts located in the U.S. Export Assistance Centers (USEACs). The USEACs work closely with the International Operations staff to identify best markets and develop effective market entry strategies to link U.S. suppliers with international buyers or partners. U.S. firms can receive practical exporting information such as distribution channels, schedules of relevant trade shows and missions, and assistance with trade finance programs available through federal, state and local sectors.

trade-related documents. It is available at federal depository libraries, can be purchased on CD-ROM, or can be accessed through the Internet at www.stat-usa.gov. Call 1(800) STAT-USA to order or for more information.

- **Industry Sector Analysis (ISA).** Structured market research reports produced on location for selected industry sectors in overseas markets.
- **International Market Insights (IMI).** Short profiles of specific foreign market conditions or opportunities prepared in overseas markets and at multilateral development banks.
- **Country Commercial Guides (CCG).** Prepared annually, the CCGs provide country-specific information on marketing U.S. products and services, leading sectors for exports and investment, trade regulations, customs and standards, investment climate, financing, business travel, and economic and trade statistics.

Other services such as the •Customized Market Analysis (CMA), •Trade Opportunity Program (TOP) and the •Agent/Distributor Service (ADS) help U.S. firms identify export prospects.

US&FCS Services

Market Research.

- **National Trade Data Bank (NTDB).**
A “one-stop” source of international trade data collected by federal agencies that includes over 190,000

A number of services are also available to help promote U.S. products and services abroad: •Commercial News USA, •Gold Key Service, •Matchmaker Trade Delegations, •International Buyer Program, •Multi-State Catalog Exhibitions, and •Trade Fair Certification.

Detailed information on the above programs and services can be found at <http://www.usatrade.gov/>.

Information & Communications Technology (ICT) Team ⁶

Information & Communications

The ICT team is made up of industry specialists from both the US&FCS and TD, who work together to provide comprehensive services to support exporting efforts of U.S. IT firms. ICT team members are located in US&FCS Export Assistance Centers in key geographic areas throughout the United States, in US&FCS offices abroad, and in TD's IT and telecommunications-focused offices in Washington, D.C. The team's structure and programs aim to meet the needs of the many small- and medium-sized IT firms and firm clusters throughout the United States.

⁶For more information on the ICT team, see http://www.usatrade.gov/US/annarbor/ICT_USA.htm.

Trade Events

Selected Information Technology-Related Trade Events in India

NASSCOM 2001

February 7-10, 2001

Mumbai, India

Event Type: Conference and Exhibition

Event Description: International exhibition and conference designed to deliver complete IT solutions to all its participants. Events will cover the most important aspect of the IT revolution including Internet/ISPs, software, e-commerce, telecom, and IT infrastructure.

Information Technologies Matchmaker

February 26-March 2, 2001

New Delhi/Hyderabad/Mumbai, India

Event Type: Matchmaker Trade Delegation

Event Description: Designed to match small- to medium-sized new-to-market or new-to-export U.S. firms with qualified business contacts in India.

Convergence India 2001

March 14-16, 2001

New Delhi, India

Event Type: Conference, Trade Show and Exhibition

Event Description: International exhibition and conference for users and providers of telecom in India and the subcontinent. Covers broadcast and telephony, broadband and services, wireless technologies, multimedia, networks, data communications and video communications.

Trade Events

Internet World India

September 26-28, 2001

New Delhi, India

Event Type: Conference, Trade Show and Exhibition

Event Description: International exhibition and conference features the latest Internet, Intranet and e-commerce solutions and services, including web-based services, content development, web design, as well as the latest cutting-edge marketing trends.

IT World COMDEX India

December 2001

New Delhi, India

Event Type: Conference, Trade Show and Exhibition

Event Description: International exhibition and conference features both established and emerging IT technologies, including Internet, Intranet and e-commerce solutions and services, including web-based services, and communications.

Foreign Commercial Service

The Commercial Service offers a full range of market contact, assessment, research and trade promotion services through its network of offices throughout India:

- < **Ahmedabad**
Tel: 011-91-79-656 5210 / 656 5216
Fax: 011-91-79-656 0763
Email: Ahmedabad.Office.Box@mail.doc.gov

- < **Bangalore**
Tel: 011-91-80-558-1452
Fax: 011-91-80-558-3630
Email: Bangalore.Office.Box@mail.doc.gov

- < **Calcutta**
Tel: 011-91-33-282-3611
Fax: 011-91-33-282-2335
Email: Calcutta.Office.Box@mail.doc.gov

- < **Chennai**
Tel: 011-91-44-811-2034
Fax: 011-91-44-811-2036
Email: Chennai.Office.Box@mail.doc.gov

- < **Mumbai**
Tel: 011-91-22-265-2511
Fax: 011-91-22-262-3850
Email: Mumbai.Office.Box@mail.doc.gov

- < **New Delhi**
Tel: 011-91-11-331-6841 / 331-6848
Fax: 011-91-11-331-5172
Email: New.Delhi.Office.Box@mail.doc.gov

- < **Pune**
Tel: 011-91-20-601-251 / 601-252
Fax: 011-91-20-601-248
Email: Pune.Office.Box@mail.doc.gov

Selected Trade Associations

National Association of Software and Service Companies (NASSCOM)

International Youth Centre
1, Circular Road
Chanakyapuri, New Delhi – 110 021, India
Tel: 91 11 3015416-19
Fax: 91 11 3015452
e-mail: nasscom@nasscom.org
web site: <http://www.nasscom.org>

The Manufacturers Association for Information Technology (MAIT)

4th Floor, PHD House
Opp. Asian Games Village
New Delhi – 110 016, India
Tel: 91-11-685-5487, 685-4284, 687-6976
Fax: 91-11-685-1321
e-mail: mait@viasd101.vsnl.net.in
web site: <http://www.mait.com>

Telecom Equipment Manufacturers Association (TEMA)

4th Floor, PHD House
Opp. Asian Games Village
New Delhi – 110 016, India
Tel: 91-11-6859621
Fax: 91-11-6859620
e-mail : tema@del2.vsnl.net.in
web site: <http://india-times.com/tema/index.html>

Electronic Components Industries Association (ELCINA)

ELCINA House, 422, Okhla Industrial Estate
New Delhi – 110020, India
Tel: 91 11 6924597, 6928053
Fax: 91 11 6923440
web site: <http://www.elcina.com>

Selected Chambers of Commerce

Confederation of Indian Industry (CII)

Mr. Tarun Das
Director General
23-26 Institutional Area
Lodi Road
New Delhi – 110 003, India
Tel: 91-11-462-9994; 462-6164
Fax: 91-11-463-3168; 462-6149
e-mail: ciico@ciionline.org
web site: <http://www.ciionline.org/>

Federation of Indian Chambers of Commerce and Industry (FICCI)

Dr. Amit Mitra
Secretary General
Federation House, Tansen Marg
New Delhi – 110 001, India
Tel: 91-11-373-8760-70
Fax: 91-11-372-1504; 332-0714
web site: <http://www.ficci.com/ficci/>

The Associated Chambers of Commerce and Industry of India (ASSOCHAM)

Mr. E.N. Murthy
Secretary General
11, Community Center
Zamrudpur, New Delhi – 110 048, India
Tel: 91-11-6292 310-21,
Fax: 91-11-645-1981, 629-2319
e-mail: assochem@sansad.nic.in
web site: www.assochem.org

Chambers of Commerce

PHD Chamber of Commerce & Industry

Mr. Harish Tandon

Secretary General

PHD House, Opp.Asian Games Village

New Delhi – 110 016, India

Tel: 91-11-685-7750, 686-3801-4

Fax: 91-11-685-5450

e-mail: phd cci @ del2.vsnl.net.in

web site: <http://www.indiansources.com/chambers/html/>

Indo-American Chamber of Commerce

Mr. Subramaniam Ayyar

Secretary General

1-C Vulcan Insurance Building

Veer Nariman Road, Churchgate

Mumbai 400020, India

Tel: 91-22-221-413

Fax: 91-22-204-6141

web site: <http://www.indous.org/>

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“Bandwidth Crisis Looms Large Over India’s Dot Com Revolution,” *India Today*, June 1, 2000, <http://www.india-today.com>

“Bandwidth Ills Could Cost India \$22.5 Billion,” *The Economic Times*, June 2, 2000 <http://economictimes.com>

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